



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of  
KWOK PUN LEE ET AL  
Serial No. 09/818,715  
Filed: MARCH 27, 2001

Atty. Docket  
US010071  
Group Art Unit: 21781  
Examiner: T. V. HUYNH  
CONF. No.: 1324

Title: DICOM TO XML GENERATOR

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DECLARATION PURSUANT TO 37 C.F.R. §1.131

Sir:

I, Jingkun Hu, hereby declare that:

1. I am the applicant of United States Patent Application Serial No. 09/818,715, filed March 27, 2001 (hereinafter, the '715 Patent Application).
2. The U.S. Patent Publication No. 2002/0122057 to Maloney, (hereinafter "Maloney"), has been identified by the Examiner in the Office Action dated July 2, 2004. Maloney was published on September 5, 2002 based on a patent application that was filed on March 2, 2001. The invention disclosed and claimed in United States Patent Application Serial No. 09/818,715 was reduced to practice in the United States by my

co-inventor, Kwok Pun Lee, and myself, under our direct control prior to the filing date of Maloney.

3. As evidence of the completion of the above invention, Exhibit B was previously submitted in a September 29, 2004 Amendment. Exhibit B consists of a copy of a Philips Research restricted access report of work performed in my place of employment at Philips North America Corporation, Philips Research Center in Briarcliff Manor, New York, U.S.A., evidencing construction, testing and verification of an operational system in accordance with the claimed invention (hereinafter, "Exhibit B"). In other words, Exhibit B evidences that the DICOM-to-XML Translator was actually designed, implemented, tested, and verified prior to the filing date of Maloney. The activity contributing to this reduction to practice was conducted by myself, Kwok Pun Lee, and/or technicians working under our direct supervision and control prior to the filing and publication dates of Maloney.

4. The reduction to practice evidenced by Exhibit B consists of a description for an actual constructed translator for structured reports from DICOM binary format to Extensible Markup Language (XML) format (hereinafter, the "DICOM-to-XML Translator"). Exhibit B and the DICOM-to-XML Translator were

not available to the public. Exhibit B was utilized as the basis for the preparation of the '715 Patent Application.

5. Exhibit B shows the results of an actual translator that Kwok Pun Lee, and myself built to validate the DICOM to XML conversion.

6. The (emphasis provided) "document describes the application scenario, design, and implementation of the DICOM2XML translator." (See, Exhibit B, page 3, lines 22-23.) For example, Exhibit B, page 3, lines 18-19 clearly states that (emphasis provided) "[w]e have implemented a translator, called DICOM2XML, which takes a structured report in DICOM binary format and produces an XML document." Section 3 of Exhibit B titled "Design Decisions" describe two exemplary translators and correspond in fact to the translators shown in FIGs. 1 and 2 of the '715 patent Application. Exhibit B on page 5, second paragraph, states "we selected the second approach" for implementing the DICOM-to-XML Translator. Other elements of the implemented DICOM-to-XML Translator are described on page 6, lines 5-6 including selection of an XML parser, Xerces version 1.1 from Apache Software Foundation. Figure 4 of Exhibit B directly corresponds to FIG. 2 of the '715 Patent Application. Exhibit B, sections 6 and 7 describes in detail the actual

Implementation of the DICOM-to-XML Translator including the mapping rules for the translation and the XSL Stylesheet that was built, tested and successfully verified. Section 8 documents that the DICOM-to-XML Translator coupled to an XML-to-DICOM translator produced a match to the originally input DICOM document.

7. In other words, the implementation that myself and Kwok Pun Lee built prior to the priority date of Maloney, produced an XML result that was verified by translating the result of the DICOM-to-XML Translator back into DICOM.

8. Accordingly, it is clear that the built and described DICOM-to-XML Translator worked for its intended purpose

9. As further proof that an embodiment of the invention as claimed was constructed and actually worked for its intended purpose, I declare that I have in my possession three files named sr-sample-spec.dat (hereinafter referred to as "File 1"), sr-sample-spec(raw).xml (hereinafter referred to as "File 2") and sr-sample-spec.xml (hereinafter referred to as "File 3").

10. As will be clear from the statements that follow, File 1, File 2, and File 3 are copies of the actual files that were utilized and derived to demonstrate that the DICOM2XML and SR XML2DICOM programs, that were reduced to practice prior to the

priority date of Maloney, and are described in Exhibit B, operated as expected (e.g., properly converted from DICOM to XML and back to DICOM).

11. File 1 is a DICOM binary file that cannot be viewed easily. However, if opened with a text editor (such as WordPad™), you can recognize some text among the binary data. This file is an example of an input DICOM file (shown as item 110 in Fig. 1 of the patent application and shown as DICOM Binary file in Figure 2 of Exhibit B). These files are not produced herein since the contents generally would be hard to discern from inspection.

12. The contents of File 1 are in fact shown in the original DICOM Structured Reporting (SR) that is described and incorporated by reference in the patent application (see, page 1, lines 25-28) and referenced in Exhibit B (see, page 12, section 10, item 1). File 1 is also one of the files described in Exhibit B, page 10, section 8, as test files that were utilized to demonstrate that the DICOM2XML and SR XML2DICOM programs operated as expected (as mentioned above).

13. File 2 is an XML file that may be viewed with a text editor or web browser, such as Internet Explorer™. File 2 is the output file generated after File 1 is first parsed by the

Dicom Parser (shown as block 120 in the patent application) and subsequently processed by the XML Builder (block 130). File 2 is an XML document shown as the output of the SR XML Builder in Exhibit B, Figure 2.

14. File 2 serves as the input to the XSLT Engine (see, the patent application, item 140 in Fig. 1). With File 2 as an input, the XSLT Engine 140 produces the File 3 (see, the patent application, FIG. 1, item 160).

15. File 3 is an XML file and can be viewed as described above with reference to File 2. File 3 is the final XML representation for the originally input DICOM file (File 1).

16. It is submitted that Exhibit B together with the assertions related to File 1, File 2, File3 clearly demonstrate that we constructed an embodiment of the DICOM-to-XML Translator that operated as described to convert a DICOM structured document into an XML document.

17. The description itself contained in Exhibit B is sufficient to enable a person of ordinary skill in the art to also implement the DICOM-to-XML Translator without requiring undue experimentation.

18. Exhibit B fully supports the claimed invention as required by Claim 1 including "[a] method for mapping a DICOM-SR

document into an XML document" as for example shown Exhibit B, Figures 1 and 2. Further "mapping each DICOM attribute of a plurality of DICOM attributes in the DICOM-SR document into a corresponding XML element of a plurality of XML elements" is illustratively shown in Exhibit B, Section 6, subparagraph 6. Further still, "outputting each XML element of the plurality of XML elements to the XML document, in a format that conforms to an XML document-type-definition of the XML document" is illustratively shown in Exhibit B, Section 7 through the use of SR XSL Style Sheets.

19. Exhibit B fully supports the claimed invention as required by Claim 2 including "[t]he method of claim 1 [as above], wherein outputting each XML element includes formatting the XML element via one or more XSLT templates to conform to the XML document-type-definition" as for example shown in Exhibit B, Section 7, entitled "SR XSL Sylesheet".

20. Exhibit B fully supports the claimed invention as required by Claim 3 including "[t]he method of claim 2 [as above], wherein the formatting of the XML element is via an XSLT engine" as for example shown in Exhibit B, Figure 3.

21. Exhibit B fully supports the claimed invention as required by Claim 4 including "[t]he method of claim 2 [as

above], wherein the one or more XSLT templates correspond to one or more DICOM Information Entities" as for example shown in Exhibit B, Section 7, entitled "SR XSL Stylesheet".

22. Exhibit B fully supports the claimed invention as required by Claim 5 including "[t]he method of claim 1 [as above], wherein the mapping of each DICOM attribute into a corresponding XML element is independent of the XML document-type-definition of the XML document" as for example shown in Exhibit B, Section 6, entitled "Implementation" and in further detail in Section 6, paragraph 6.

23. Exhibit B fully supports the claimed invention as required by Claim 6 including "[t]he method of claim 1 [as above], further including parsing each DICOM attribute to segregate a DICOM data type, and a DICOM codeID from the DICOM attribute, and wherein the mapping includes: assigning the DICOM codeID to a first attribute of the corresponding XML element, mapping the DICOM data type to a corresponding value type of the corresponding XML element, and assigning the corresponding value type to a second attribute of the corresponding XML element" as for example shown in Exhibit B, Section 6, entitled "Implementation" and in further detail in Section 6, paragraphs 2 through 6.



24. Exhibit B fully supports the claimed invention as required by Claim 7 including "[t]he method of claim 6 [as above], further including parsing the DICOM attribute to segregate a DICOM attribute value, and wherein the mapping further includes assigning the DICOM attribute value to a third attribute of the corresponding XML element" as for example shown in Exhibit B, Section 6, entitled "Implementation" and in further detail in Section 6, Paragraphs 2 through 6.

25. Exhibit B fully supports the claimed invention as required by Claim 8 including "[a] DICOM to XML conversion system" as for example shown in Figures 1 and 2 of Exhibit B. Further "a DICOM parser that is configured to provide a plurality of DICOM attributes from a DICOM data file" is illustratively shown in Exhibit B, Section 3. Further still, "an XML formatter, operably coupled to the DICOM parser, that is configured to provide a plurality of XML elements corresponding to the plurality of DICOM attributes" is illustratively shown in Exhibit B, Figure 3.

26. Exhibit B fully supports the claimed invention as required by Claim 9 including "[t]he DICOM to XML conversion system of claim 8 [as above], wherein the XML formatter is configured to provide the plurality of XML elements in a format

that conforms to an XML document-type-definition of an XML document comprising the plurality of XML elements" as for example shown in Exhibit B, Section 5, entitled "Component Diagram" and in further detail in Figure 4 and the accompanying description of Figure 4.

27. Exhibit B fully supports the claimed invention as required by Claim 10 including "[t]he DICOM to XML conversion system of claim 9 [as above], wherein the XML formatter includes an XSLT engine that is configured to provide the plurality of XML elements based on one or more XSLT stylesheet templates that conform to the XML document-type-definition" as for example shown in Exhibit B, Figure 3 and as for example shown in section 7, entitled "SR XSL Sylesheet".

28. Exhibit B fully supports the claimed invention as required by Claim 11 including "[t]he DICOM to XML conversion system of claim 10 [as above], wherein the one or more XSLT stylesheet templates correspond to one or more DICOM Information Entities" as for example shown in Exhibit B, Section 7, entitled "SR XSL Sylesheet".

29. Exhibit B fully supports the claimed invention as required by Claim 12 including "[t]he DICOM to XML conversion system of claim 9 [as above], further including an XML builder,

operably coupled between the DICOM parser and the XML formatter, that is configured to effect a direct mapping of each DICOM attribute of the plurality of DICOM attributes into a corresponding XML element of the plurality of XML elements independent of the XML document-type-definition" as for example shown in Exhibit B, Figure 2 and Section 6, entitled "Implementation" and in further detail in Section 6, paragraph 6.

30. Exhibit B fully supports the claimed invention as required by Claim 13 including "[t]he DICOM to XML conversion system of claim 12 [as above], wherein the DICOM parser is configured to parse each DICOM attribute to provide a DICOM data type, and a DICOM codeID from the DICOM attribute, and the XML builder is configured to: assign the DICOM codeID to a first attribute of the corresponding XML element, map the DICOM data type to a corresponding value type of the corresponding XML element, and assign the corresponding value type to a second attribute of the corresponding XML element" as for example shown in Exhibit B, Section 6, entitled "Implementation" and in further detail in Section 6, paragraphs 2 through 6.

31. Exhibit B fully supports the claimed invention as required by Claim 14 including "[t]he DICOM parser is further

configured to parse each DICOM attribute to provide a DICOM attribute value, and the XML builder is further configured to assign the DICOM attribute value to a third attribute of the corresponding XML element" as for example shown in Exhibit B, Section 6, entitled "Implementation" and in further detail in Section 6, paragraphs 2 through 6.

32. It is therefore submitted that Exhibit B together with the assertions related to File 1, File 2, File3 clearly demonstrate that we (myself and Kwok Pun Lee) constructed an embodiment of the DICOM to XML Converter that illustratively met each of the elements of Claims 1-14.

33. This evidence together clearly demonstrates a reduction to practice prior to the priority date of Maloney.

34. I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Date: 8-25-05 Jingkun Hu

Jingkun Hu